Space Weather Forecast

Issued on Sunday, 02 July 2023 at 01:33 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of Isolated Minor/Moderate R1/R2 Radio Blackouts. Chance of Minor Geomagnetic Storm intervals 04 Jul.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours, with X-ray activity showing occasional low-level Common-class flares. A moderate class flare reaching M1.1 at 01/2223UTC, originated from the largest and most magnetically complex sunspot group on the visible side of the Sun, in the northwest quadrant. This group has the greatest potential for notable flares. This was one of seven sunspot regions on the Earth-facing side of the Sun. One of these remains unnumbered, and the remaining sunspots are all considerably smaller, weaker and magnetically simple.
No Earth directed Coronal Mass Ejections (CMEs) have been visible in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind indicates a weak connection to a small coronal hole feature in the southwest quadrant. The solar wind speed was initially near Elevated levels around 500km/s, with a slow decline noted to slightly elevated levels (450km/s). The associated magnetic field was weak throughout, while the important north-south component also varied weakly, and mainly northward in orientation. Geomagnetic activity remained Quiet to Unsettled.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is expected, with a chance of reaching Moderate levels given isolated Moderate-class flares. This risk mostly coming from the large sunspot in the northwest at first, but also enhanced by new or returning regions through the forecast period.

Solar Wind / Geomagnetic Activity: Solar winds likely to remain at slightly elevated levels for much of the period. A connection to a small coronal hole near centre disc in the southern hemisphere may occur on day 3 (04 Jul), however any enhancements from this are expected to be weak. A CME associated with the Moderate class flare on the 29 Jun may affect Earth as a glancing blow on day 3 (04 Jul). Predominantly Quiet geomagnetic activity is expected through the period, with activity potentially becoming Unsettled or Active with any CME or high-speed stream arrivals. There is a chance of isolated Minor Storm intervals on day 3 for CME or combined CME and high-speed stream effects, however confidence is rather low.

Energetic Particles / Solar Radiation: Solar radiation storms are not expected in the period and levels of protons are most likely to remain at Background levels. There remains a daily slight chance of reaching the Minor Storm level, mainly due to the large sunspot region in the northwest.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	20	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.